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CONTROLLING THE MEXICAN BEAN BEETLE

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CONTROLLING THE MEXICAN BEAN BEETLE

The Mexican bean beetle [1] is the most destructive insect enemy of beans from the Mississippi River Valley eastward, in every State except Minnesota. It spread eastward in the 1920's from the Southwestern States, where it has been a pest for more than a hundred years. The Mexican bean beetle is copper-colored, has 16 black spots on its back, and is about ¼ inch long and ⅕ inch wide. It is one of the lady beetles ("ladybugs"), most of which are beneficial.

DAMAGE

The beetle feeds on the leaves of snap, kidney, pinto, navy, lima, and other beans, including soybeans, and sometimes on ladino clover.

Although the beetle prefers to feed on soft leaf tissue, it attacks young pods and even stems if the leaves are tough or have already been destroyed.

Young larvae damage the underside of the leaves, but older larvae and adult beetles often eat through the leaf, leaving only the veins. This gives the leaves a lacy look.

DEVELOPMENT

During spring, summer, and early fall, female beetles deposit yellow eggs in clusters on the underside of bean leaves. Larvae hatch in 5 to 14 days, depending on the weather, and begin feeding in just a few hours. They are yellow and covered with branched spines, which give them a fuzzy appearance. The larvae grow to one-third inch and are full grown in 3 to 5 weeks. As they approach the pupal stage, they are roundish.

The pupae are attached to the underside of bean leaves or nearby weeds and are inactive for about a week. When the adult emerges it is light yellow, but within a few days it takes on a characteristic copper color and the black spots appear on its back. The females lay eggs every 2 or 3 days, beginning 10 to 14 days after they become adults.

Adult beetles usually live 4 to 6 weeks during the active season. If winter is near, however, the adults hibernate, usually in woodland under pine needles and leaves, or in bean fields when crops have not been plowed under. They come out of hibernation in spring, reproduce, and repeat the cycle.

The number of generations that develop each season varies, depend-

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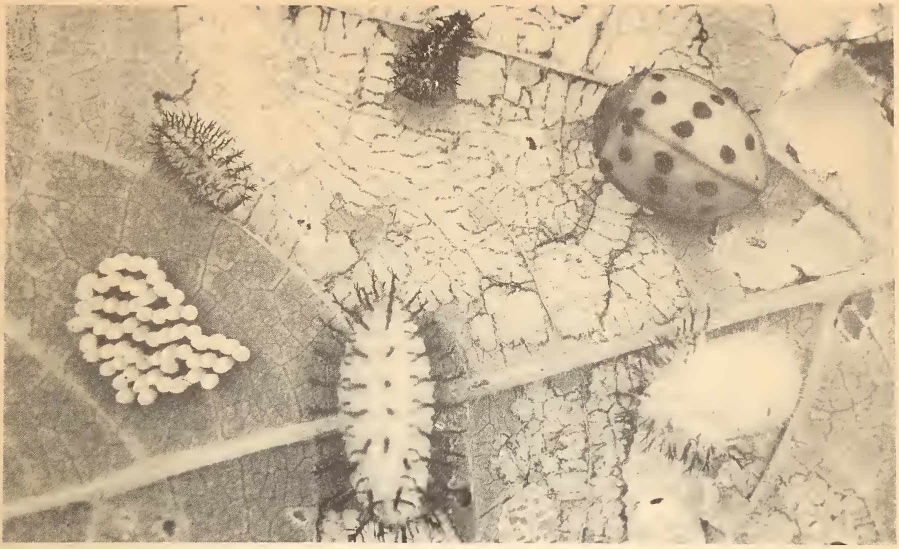
[1] *Epilachna varivestis*



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Mexican bean beetles feeding on the underside of a bean leaf. Clockwise from upper right: adult, pupa, full-grown larva, eggs, larva, immature larva.

ing on the latitude and the elevation. In the North and at higher elevations, one generation and part of a second develop. In the South, as many as three generations may develop.

CHEMICAL CONTROL

If Mexican bean beetles are damaging your crop, use an insecticide.

Kinds of Insecticides

Diazinon, malathion, methoxychlor, dimethoate, parathion, or carbaryl sprays or dusts will protect beans from injury by the Mexican bean beetle. All except diazinon will also control the potato leafhopper, which usually is present where the Mexican bean beetle is a pest. Methoxychlor, dimethoate, and carbaryl will also control the corn earworm, which is a pest of fall bean crops in many areas. Except for methoxychlor, these insecticides are highly toxic to honey bees and other pollinating insects. There is more information on protecting honey bees in Leaflet 544, "Protecting Honey Bees from Pesticides." Send your request on a post card to the Office of Information, U.S. Department of Agriculture, Washington, D.C. 20250. Please include your ZIP Code in your return address.

Diazinon may be applied in a spray at 1 pound of 50-percent wettable powder per 100 gallons. *Do not apply diazinon within 7 days before picking beans, within 4 days before cutting for hay, or within 1 day before feeding forage to livestock. Do not apply diazinon to soybeans.*

Malathion is effective in a spray at 2 pints of a 57-percent emulsifiable concentrate per 100 gallons of

TC–96

Unsprayed beans at left were damaged by Mexican bean beetles; sprayed beans at right escaped injury.

water, or in a 4-percent dust. *Malathion should not be applied to beans within 1 day before harvest.*

Methoxychlor may be used in a spray at 3 pounds of 50-percent wettable powder per 100 gallons, or in a 5-percent dust. *Do not apply methoxychlor within 7 days before a harvest, or within 3 days if plants are not to be fed to livestock.*

Dimethoate may be applied in a spray containing 1 pint of the 2-pounds-per-gallon emulsifiable concentrate per 100 gallons. *Do not apply dimethoate within 1 day before harvest. Do not apply dimethoate to clover or soybeans.*

Parathion may be used in a spray at 2 pounds of a 25-percent or 3 pounds of a 15-percent wettable powder per 100 gallons, or in a 1-percent dust. *Do not apply parathion within 7 days before harvest.*

Carbaryl may be used as a spray at 1 to 2 pounds of the 50-percent wettable powder per 100 gallons or in a 2-percent dust. *Carbaryl may be applied up until the day before harvest.*

See precautions on pages 7 and 8 for using, handling, and storing insecticides.

How To Apply

Spray or dust the underside of the leaves, since this is where the beetles feed. Treating only the upper surface of the leaves will not give good control and wastes the insecticide. Careful application of insecticide conserves material, increases the efficiency of pest control, and decreases the amount of residue.

Sprays.—The spraying directions in this publication are for application at rates of 100 gallons per acre or 1½ quarts per 50 feet of row. If your sprayer operates best at a different rate, the amounts should be adjusted accordingly.

For best results on large plantings use a power or traction unit that will spray three to eight rows at a time, at a pressure of 150 to 250 pounds per square inch.

The boom width should match the rows, and the rows should all be the same width so that you will not have to adjust the nozzles as you move from field to field. For young plants the boom should be lowered so that the nozzles are about 2 inches above the ground. As plants grow the boom should be raised.

To reach the underside of the leaves, direct the nozzles upward into the plants at a 45-degree angle, one to each side of the row. Direct a third nozzle downward from above the row. Place new disks in the nozzles after 10 to 15 hours of spraying, because the holes in the disks become larger with use.

When spraying on rough ground, put a section of rubber hose in the vertical outlet pipes to make them flexible and prevent breakage.

The spray mixture in the tank should be agitated continuously to keep the insecticide from settling.

Large acreages can be sprayed from aircraft. This is often done on irrigated land in the West.

Dusts.—Apply dusts at 25 to 35 pounds per acre, or 1½ to 2 ounces per 50 feet of row. Use hand dusters for small plantings. For larger fields, you will need power or traction machines. All dusters should have nozzles that direct the dust upward to the underside of the leaves. If wind velocity is a problem, you can get better coverage and avoid drift by using a cloth apron that is 10 to 15 feet long. Attach the apron to the duster so that it drags behind the nozzles and keeps the dust near the plants.

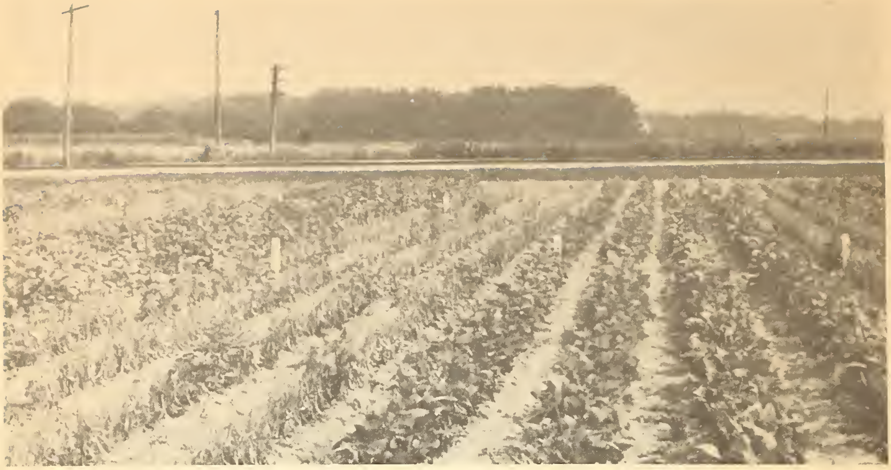
Aerial dusting is not very effective, because the dust does not reach the underside of the leaves.

When To Apply

Use insecticide as soon as you notice injury, or when you find a beetle or cluster of eggs about every 6 feet along a row. To find the beetles, shake the plants so that beetles drop off. Look for egg clusters on the underside of

TC–7504

Tractor-drawn 8-row power sprayer applies insecticide to a bean field.



TC-52

Unsprayed rows of snap beans on the left were defoliated by Mexican bean beetles; sprayed rows on the right were not damaged.

leaves. To protect new growth, give plants a second dose of insecticide a week or 10 days after the first spraying or dusting. Two applications are usually enough for snap beans. Lima beans may need more applications.

OTHER CONTROLS

Natural Control

In the Southeastern States other kinds of lady beetles feed on eggs and young larvae of the Mexican bean beetle. The anchor bug preys on larvae, pupae, and adult beetles. The spined soldier bug attacks all stages.

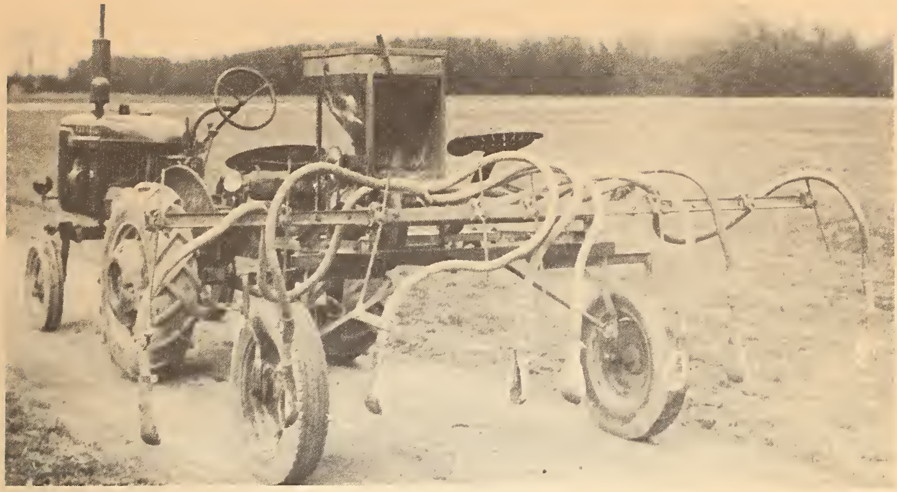
Heavy spring and summer rains help keep down the beetle population.

A few days of drought and extreme heat may destroy an entire infestation without seriously damaging the crop. If you do not irrigate, and plants are dry, wait a few days to apply insecticide to see if these natural controls will destroy the beetles.

COOPERATIVE PROGRAMS

A few untreated rows of beans in a small home garden can be the breeding ground for hundreds of beetles, which then can spread to commercial fields and destroy large crops. Communitywide control programs benefit and protect both farmers and gardeners.

Many canners supply insecticides and hand sprayers at cost to gardeners. In some areas, farm organizations, in cooperation with county agricultural agents, give similar assistance.



TC–2155

This 4-row tractor-drawn power duster has nozzles for dusting underside of leaves.

Cultural Control

Burying the remains of plants immediately after harvest by plowing them under at least 6 inches destroys most of the beetles. To be most effective, this should be done by all growers in an area.

PRECAUTIONS

Insecticides used improperly can be injurious to man and animals. Use them only when needed and handle them with care. Follow the directions and heed all precautions on the labels.

Some States have special restrictions on the use of certain insecticides. Before applying insecticides, check State and local regulations.

Keep insecticides in closed, well-labeled containers in a dry place. Store them where they will not contaminate food or feed, and where children and animals cannot reach them. Promptly dispose of empty insecticide containers; do not use for any other purpose.

When handling an insecticide, wear clean, dry clothing.

Avoid repeated or prolonged contact of insecticide with your skin.

Wear protective clothing and equipment if specified on the container label. Avoid prolonged inhalation of insecticide dusts or mists.

Avoid spilling an insecticide on your skin, and keep it out of your eyes, nose, and mouth. If you spill any on your skin or clothing, remove contaminated clothing immediately and wash the skin thoroughly with soap and water. Launder the clothing before wearing it again. If the insecticide gets in the eyes, flush with plenty of water for 5 minutes and get medical attention.

After handling an insecticide, do not eat, drink, or smoke until you have washed your hands and face. Wash any exposed skin immediately after applying an insecticide.

Avoid drift of insecticide to nearby wildlife habitats, bee yards, crops, or livestock. Do not apply insecticides under conditions favoring drift from the area to be treated.

Malathion, methoxychlor, and carbaryl can be used without special protective clothing or devices if they are in a diluted dust or spray form.

Diazinon and dimethoate can be absorbed through the skin in harmful quantities. When working with these insecticides in any form, take extra care not to let them come in contact with the skin. Wear protective clothing and respiratory devices as directed on the label.

Parathion is extremely toxic and may cause death if swallowed, inhaled, or absorbed through the skin. This insecticide should be applied only by a person who is thoroughly familiar with its hazards and who will assume full responsibility for safe use and comply with all precautions on the label.

Many insecticides are highly toxic to fish and aquatic animals. Keep insecticides out of all water sources such as ponds, streams, and wells. Do not clean spraying equipment or dump excess spray material near such water.

Do not apply insecticides to plants during hours when honey bees and other pollinating insects are visiting them.

Bury empty insecticide containers at a sanitary land-fill dump, or crush and bury them at least 18 inches deep in a level, isolated place where they will not contaminate water supplies.

Prepared by
Entomology Research Division
Agricultural Research Service

PROTECT
Use Pesticides Safely
FOLLOW THE LABEL
U.S. DEPARTMENT OF AGRICULTURE

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